

Remarks

Claims 163-171 are pending in the Application.

Claims 170 and 171 are allowed.

Claims 163-167 are rejected.

Claims 163 and 164 are amended herein.

Claims 168 and 169 are cancelled herein.

I. RESTRICTION UNDER 35 U.S.C. § 121

Examiner has restricted Claims into two Groups. On April 29, 2005, Applicant responded to the Office Action having a mailing date of April 22, 2005 ("Restriction Requirement"), having a shortened statutory period for response set to expire on May 22, 2005, and elected to continue prosecution of Group I (Claims 163-167, and 170-171) without traverse. Claims 168 and 169 are withdrawn from consideration and have been cancelled herein without prejudice.

II. REJECTION UNDER 35 U.S.C. § 112, ¶2

Examiner has rejected Claim 164 under 35 U.S.C. § 112, ¶2, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Office Action at 2. Examiner contends that "Claim 164 is unclear in what the nexus between oxidation and protrusion is." *Id.*

While Claim 164 has been amended for other reasons, Applicant respectfully traverses the rejection that the previously presented claim is indefinite. The relationship between oxidation and protrusion is that the oxidation causes breakage of the nanotubes that can protrude up from the surface. The relationship is given in following citation from the Application at 4, *ll.* 22-29.

In another embodiment, still another method for forming a macroscopic molecular array of tubular carbon molecules is disclosed. It includes the steps of providing surface containing purified but entangled and relatively endless single-

wall carbon nanotube material; subjecting the surface to oxidizing conditions sufficient to cause short lengths of broken nanotubes to protrude up from the surface; and applying an electric field to the surface to cause the nanotubes protruding from the surface to align in an orientation generally perpendicular to the surface and coalesce into an array by van der Waals interaction forces.

Another citation, given below, is from the Application, at 36, *ll.*20-27.

Another method for forming a suitable template molecular array involves employing purified bucky paper as the starting material. Upon oxidative treatment of the bucky paper surface (*e.g.*, with O₂/CO₂ at about 500°C), the sides as well as ends of SWNTs are attacked and many tube and/or rope ends protrude up from the surface of the paper. Disposing the resulting bucky paper in an electric field (*e.g.*, 100 V/cm²) results in the protruding tubes and or ropes aligning in a direction substantially perpendicular to the paper surface. These tubes tend to coalesce due to van der Waals forces to form a molecular array.

Accordingly, Applicant asserts that previously presented Claim 164 is not indefinite and respectfully requests that the Examiner withdraw the rejection of Claim 164 and Claims 165-167, which depend from Claim 164, under 35 U.S.C. § 112, ¶ 2.

III. REJECTION UNDER 35 U.S.C. § 103(a) OVER RABINOWITZ

Examiner has rejected Claims 163-167 under 35 U.S.C. § 103(a) as being unpatentable as obvious over Rabinowitz, United States Patent 5,697,827, (“*Rabinowitz*”). Office Action, at 2. Examiner contends that the “reference teaches in columns 17-18 a device having nanotubes aligned in a field. This differs in not requiring SWNTs, but these are suggested by the reference. Thus, using them is an obvious expedient to optimize the properties of the emitter. As the tubes protrude, the ambient atmosphere is ‘sufficient’. Note that claim 167 encompasses room temperature.” *Id.*

Applicant has amended Claim 163 to incorporate the element of “subjecting the surface to oxidizing conditions sufficient to cause the single-wall carbon nanotubes to break and protrude from the surface.” Applicant has also amended dependent Claim 164 (also rejected by the Examiner) to remove a similar element. No new matter has been added by way of these amendments. Support for the added element may be found in the Application, at 4, *ll.*22-29 and at 36, *ll.*20-27.

Regarding amended Claim 163, Applicant submits that *Rabinowitz* does not teach or suggest the feature incorporated from Claim 164, namely “subjecting the surface to oxidizing conditions sufficient to cause the single-wall carbon nanotubes to break and protrude from the surface.” As *Rabinowitz* does not teach or suggest this element, amended Claim 163 cannot be held *prima facie* obvious under 35 U.S.C. § 103(a).

Claims 164-167 depend directly from amended Claim 163. Thus, Claims 164-167 cannot be held *prima facie* obvious for the same reasons cited for amended Claim 163.

Accordingly, Applicant respectfully requests that the Examiner withdraw rejection of Claims 163-167 under 35 U.S.C. § 103(a) as being obvious over *Rabinowitz*.

IV. REJECTION UNDER 35 U.S.C. § 102 AS BEING ANTICIPATED BY KIANG

Examiner has rejected Claims 163-167 under 35 U.S.C. § 102(a) as being anticipated by Kiang *et al.*, “Structural Modification of Single-Layer Carbon Nanotubes with an Electron Beam,” *J. Phys. Chem.* Vol. 100, 3749-3752 (1996), (“*Kiang*”). Office Action, at 2. Examiner contends that the “reference treats SWNTs in an electron beam. This is taken to imply/require the presence of a field. As the ‘oxidation’ conditions merely encompass the atmosphere, the claims are met.” *Id.*

As noted above, Applicant has amended Claim 163 to incorporate the element of “subjecting the surface to oxidizing conditions sufficient to cause the single-wall carbon nanotubes to break and protrude from the surface,” which was an element of rejected dependent Claim 164.

Regarding Claim 163, Applicant submits that *Kiang* does not teach “subjecting the surface to oxidizing conditions sufficient to cause the single-wall carbon nanotubes to break and protrude from the surface.” Furthermore, *Kiang* does not teach “applying an electric field to the surface to form an array comprising the single-wall carbon nanotubes on the surface.” As *Kiang* does not teach these elements, the claim cannot be held anticipated under 35 U.S.C. § 102(a).

Claims 164-167 depend directly from amended Claim 163. Thus, Claims 164-167 cannot be held anticipated for the same reasons cited for amended Claim 163.

Accordingly, Applicant respectfully requests that the Examiner withdraw rejection of Claims 163-167 under 35 U.S.C. § 102(a) as being anticipated by *Kiang*.

V. ALLOWED CLAIMS

Examiner has indicated that Claims 170 and 171 are allowable.

VI. CONCLUSION

As a result of the foregoing, it is asserted by Applicant that the Claims in the present Application are in a condition for allowance, and respectfully requests allowance of such Claims.

Applicant believes that no further fees are due. However, the Director is Authorized to debit any amounts due by this paper to Deposit Account No. 23-2426 of Winstead Sechrest & Minick P.C.

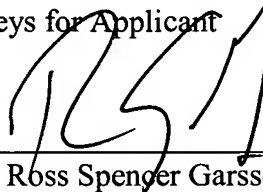
Applicant respectfully requests that Applicant's attorney be called at the below listed number if should there be any questions related to this matter.

Respectfully submitted,

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